

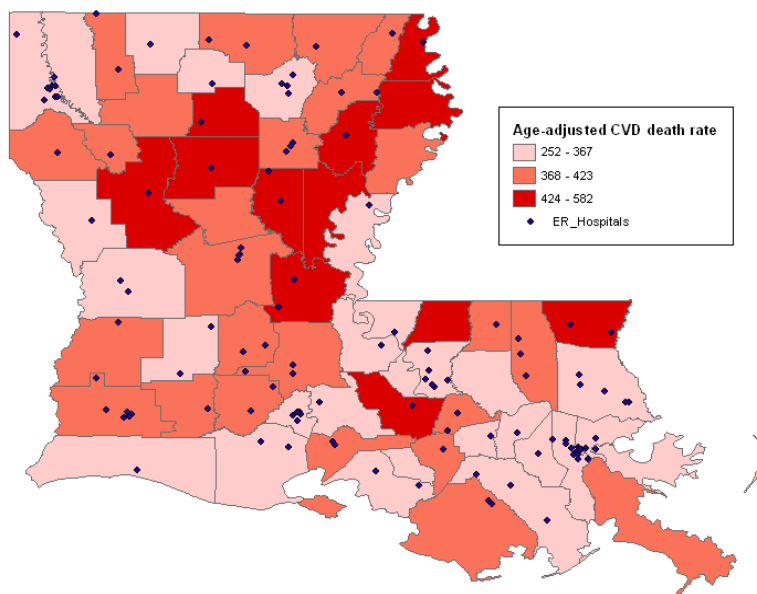
2005 LOUISIANA STATE OF THE HEART & STROKE REPORT

Statistics for
Cardiovascular Diseases,
Including
Parish-by-Parish
Mortality

Cardiovascular disease (CVD) including heart disease and stroke, is the number one killer in every area of the state. More Louisianans die each year from CVD than from any other cause.

Published by:

CVD Mortality Rates By Parish 2000-2002



American Heart
Association® 
Fighting Heart Disease and Stroke

Louisiana Office of
Public Health



* Age-adjusted death rates are per 100,000 population, based on the year 2000 standard.
* The CVD Age-adjusted death rate is 327 in U.S. and 367 in Louisiana in 2001.

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Useful Web Sites

- Louisiana Heart Disease & Stroke Prevention Program:
<http://www.oph.dhh.state.la.us/chronicdisease/cardiovascularisease/index.html>
- American Heart Association: www.americanheart.org
- CDC's Cardiovascular Health Program: www.cdc.gov/cvh/
- Louisiana Office of Public Health: www.oph.dhh.state.la.us
- Mortality Data: <http://wonder.cdc.gov>
- BRFSS: www.cdc.gov/nccdphp/brfss

Executive Summary

The following pages describe a state of tragic proportions. While Louisiana ranks 28th in terms of total population in the U.S. it has the ninth highest mortality rate for Cardiovascular Disease (CVD) and the twelfth highest mortality rate for stroke. The advances in medicine have contributed to a gradual decrease in the national death rate for CVD. Heart Disease and Stroke are still the first and third cause of death in Louisiana. The controllable “risk factors” that contribute to a high mortality rate include poor nutrition, lack of physical activity, high blood cholesterol, high blood pressure, obesity, diabetes and tobacco use. Through a review of this report, it becomes evident that the burden of CVD in Louisiana is still quite significant; however, most of the risk factors, except family history of CVD, are controllable. CVD cost the state of Louisiana \$1.4 billion in 1999 alone, according to the Louisiana Hospital Inpatient Discharge Data (LAHIDD). LAHIDD confirmed that the cost of CVD had risen to \$2.4 billion in 2003, increase of approximately 71%. This is evidence of the significant impact of CVD on the State of Louisiana in terms of death, disability, and state dollars. The social and economic cost to the state must alert the citizens and serve as call to action to move toward healthier lifestyles.

Here are **key findings** of the report:

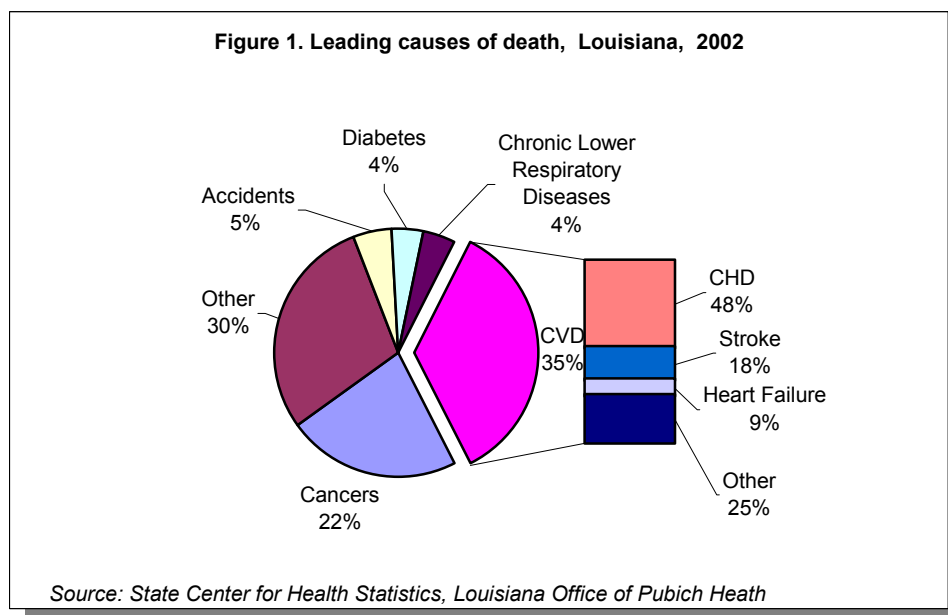
- Cardiovascular disease (CVD), including heart disease and stroke, was the number one killer of Louisianans in 2002, accounting for 35% of all deaths.
- In 2002, approximately 15,000 Louisianans died due to CVD.
- The CVD death rate in Louisiana was 12% higher than the national rate in 2002.
- CVD kills more women than men in Louisiana, although the age-adjusted mortality rate is higher for men.
- For both men and women in Louisiana, age-adjusted CVD death rates are higher for African Americans compared to whites.
- Most CVD deaths in Louisiana were classified as coronary heart disease (48%) or stroke (18%) in 2002.
- Louisiana had the ninth highest mortality rate due to cardiovascular disease among the 50 states and D.C. in 2002, and twelfth highest mortality rate for stroke.
- CVD was responsible for more than 91,000 hospitalizations in 2003 and \$2.4 billion in hospital charges in Louisiana.
- In 2002, 24% of Louisiana adults reported that they currently smoked.
- In 2003, only 40% of Louisiana adults reported that they met the Healthy People 2010 recommendations for physical activity.
- Over half (61%) of all Louisiana adults were overweight or obese in 2003.
- The awareness of the individual signs and symptoms of heart attack and stroke varied widely. In general, African Americans reported being less aware of signs and symptoms of heart attack and stroke than Whites.
- A great proportion of death and disability due to CVD is preventable. A collaborative effort involving individuals from communities, schools, workplaces and healthcare is underway with the Louisiana Heart Disease and Stroke Prevention Coalition. Through education, policy and environmental change, the coalition is paving the way for a “heart-healthy” Louisiana.

Introduction

Cardiovascular disease (CVD), including heart disease and stroke, is the leading cause of death and disability in Louisiana and the United States. Almost 0.9 million people in the United States die of CVD each year, accounting for more than 35% of all deaths.

In Louisiana, CVD caused 14,627 deaths in 2002, 35% of all deaths for that year (Figure 1). In combination, coronary heart disease and stroke, accounted for about 66% of all CVD deaths. Louisiana had the ninth highest mortality rate due to cardiovascular disease among the 50 states and D.C. in 2002.

Death and disability due to CVD are related to a number of risk factors including smoking, high blood pressure, high blood cholesterol, lack of regular physical activity, poor nutrition, diabetes, and family history of cardiovascular diseases. Most of the risk factors can be lowered by the adoption of a healthier lifestyle.

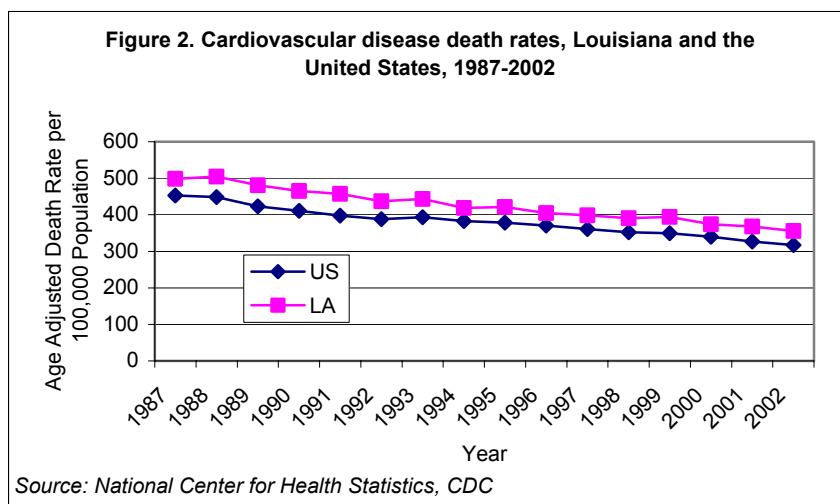


This report describes the burden of CVD in Louisiana. It presents a brief overview of the CVD death rates in the state during the past 15 years; the parish-specific death rates; the disparities of CVD in Louisiana; the number of hospitalizations for CVD; the prevalence of CVD risk factors among adults in Louisiana compared to the nation as a whole, and the need for awareness of signs and symptoms of heart attacks and strokes.

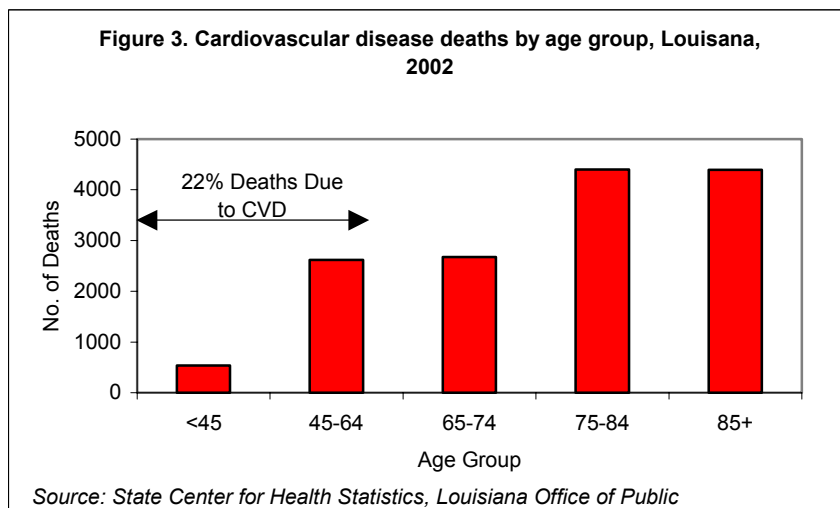
Trends in Cardiovascular Disease Mortality in Louisiana

Cardiovascular disease death rates have shown a steady decline both in Louisiana and the United States over the past 15 years (Figure 2). The causes of this decline are debatable, but presumably are related to the decline in cigarette smoking during the 80s', improved blood pressure control, and improvements in medical care.

Although the death rate due to CVD in Louisiana continues to decline, the speed of decline is slowing. Over the past 15 years, 1987-2002, Louisiana's CVD death rate was consistently higher than the US rate. In the year 2002, Louisiana's rate was 12% above the US median (Figure 2).



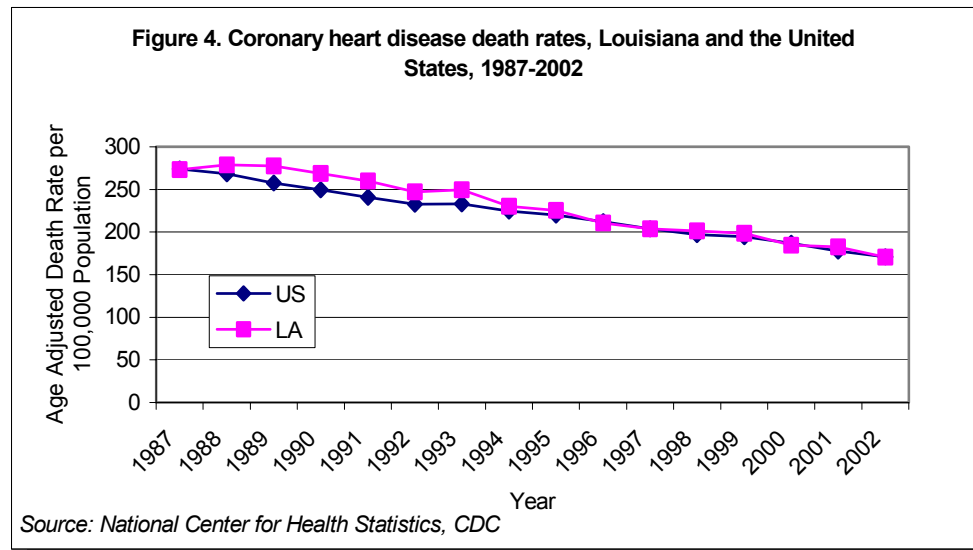
Cardiovascular disease is more common in older people; however, it is not just a disease of old age. The process of arterial narrowing, which causes heart attacks and strokes, starts soon after birth. The age at which blocked arteries actually kill varies greatly, and death can occur at a young age. Of Louisianans who died from CVD in 2002, over one fifth (22%) were younger than 65 years old (Figure 3).



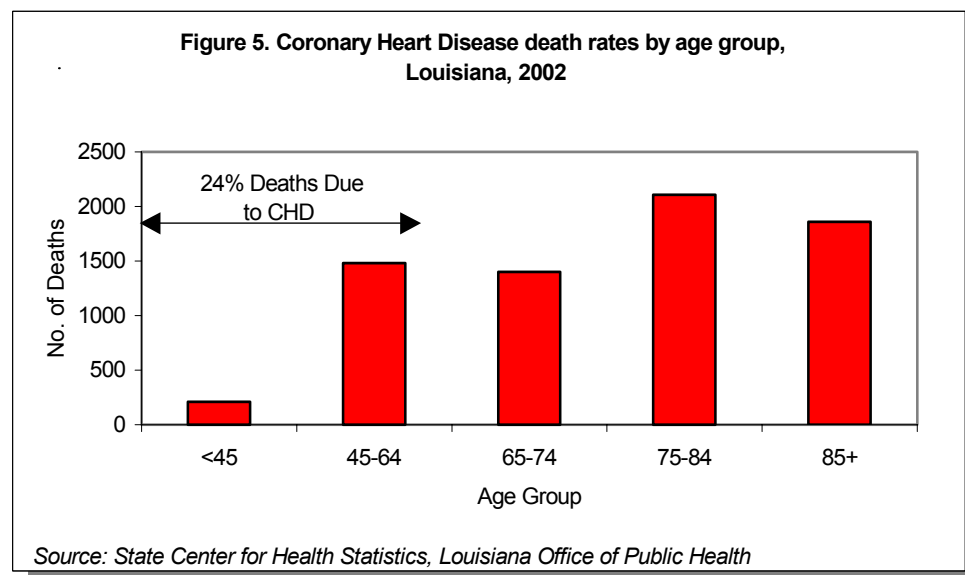
Coronary Heart Disease Mortality in Louisiana

Coronary heart disease (CHD), also known as ischemic heart disease (IHD), refers to the narrowing of the coronary arteries, which reduces blood flow and oxygen to the heart. CHD includes acute myocardial infarction (“heart attacks”) and complications resulting from previous infarctions. Of the 14,627 cardiovascular deaths in Louisiana in 2002, 7,054 (48%) were from coronary heart disease (Figure 1).

Deaths due to coronary heart disease have decreased over the past 15 years nationally, and the death rate in Louisiana has followed a similar decline (Figure 4). The death rates of CHD in Louisiana were higher than the national rates before 1996, but close to the national median in recent years (1996-2002).



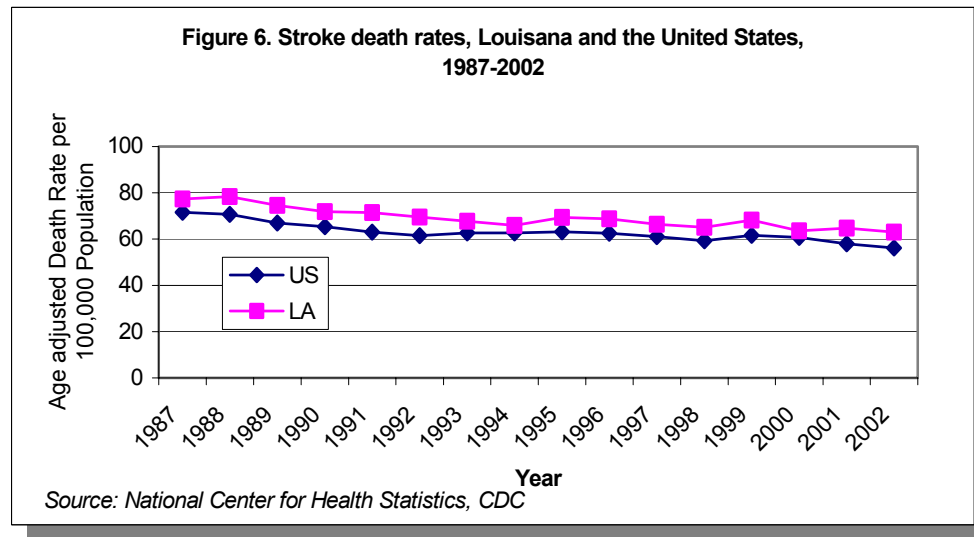
Compared to cardiovascular disease overall, CHD is more likely to cause death in those less than 65 years old. In 2002, almost one out of four deaths due to CHD happened among those younger than 65 years in Louisiana (Figure 5).



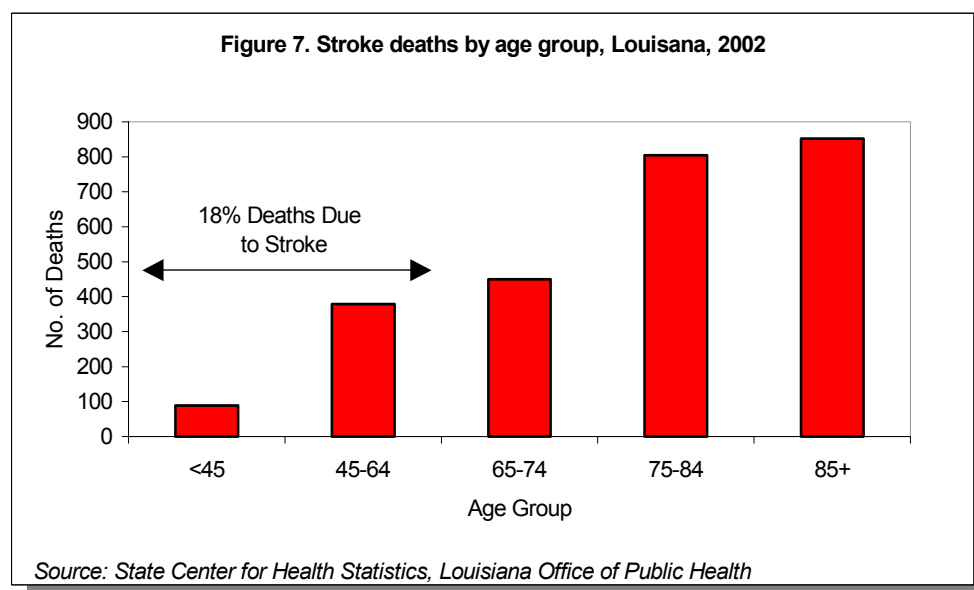
Stroke Mortality in Louisiana

Stroke, technically known as a cerebrovascular accident, refers to an infarction (loss of blood supply due to a blocked artery) or hemorrhage in the brain. Of the 14,627 cardiovascular deaths in Louisiana in 2002, 2,575 (18%) were from stroke (Figure 1).

The age-adjusted death rates from stroke have decreased over the past 15 years, both in Louisiana and the United States (Figure 6); however, the speed of decline has slowed since 1992. The age-adjusted stroke death rates in Louisiana are consistently higher than the national median. It was 12% above the US median in 2002.



Compared to cardiovascular disease overall, stroke is less likely to cause death in those less than 65 years old. In 2002, 18% of the deaths due to CHD happened among those younger than 65 years in Louisiana (Figure 7).



Health Disparities in Cardiovascular Disease

Disparities in cardiovascular disease mortality rates especially coronary heart disease and stroke mortality rates between racial and gender groups are of great concern. The majority of residents in Louisiana are White (63.9%) and Black (32.5%). The gender distribution is almost equal in all racial groups with women slightly outnumbering men (Table 1).

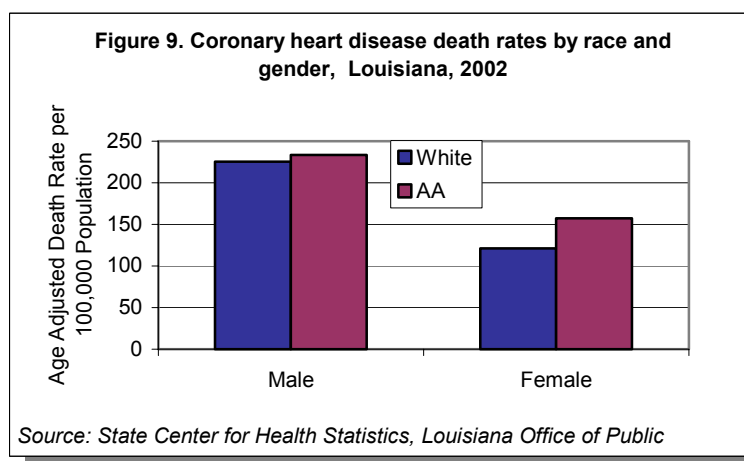
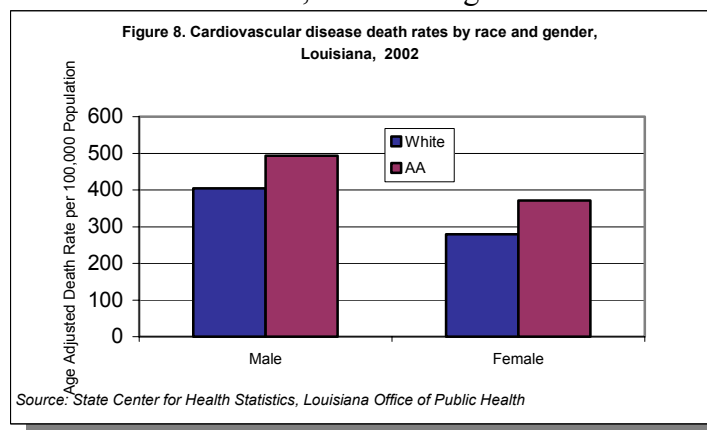
Table 1. Gender and race distribution in Louisiana population, 2000

Gender	Race	Population N (%)
Male	White	1,398,018 (31.3)
	Black	683,490 (15.3)
	Other	81,395 (1.8)
Female	White	1,458,143 (32.6)
	Black	768,454 (17.2)
	Other	79,476 (1.8)
Both	Total	4,468,976 (100)

Source: United State Census Bureau, 2000 Census

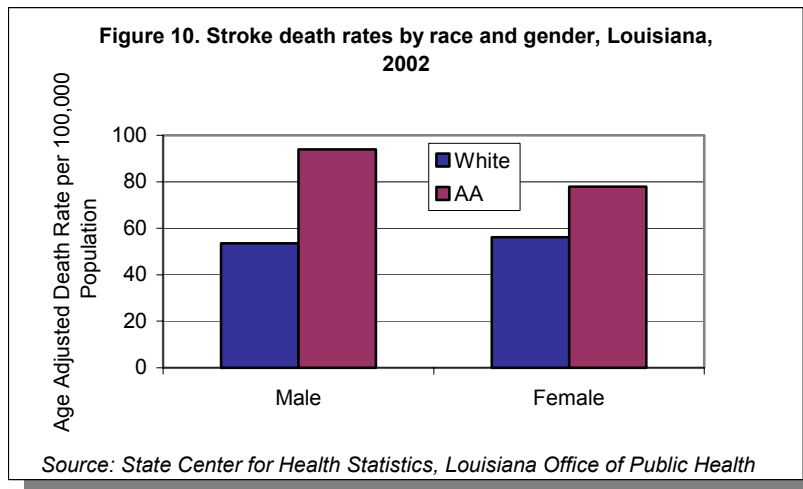
CVD death rates differ by race and gender. In Louisiana, African Americans have higher CVD death rates than Whites, and men have higher rates than women. In 2002, the CVD death rate was 22% higher for African American males than White males, and 33% higher for African American females than White females (Figure 8).

In 2002, although the age-adjusted death rate was higher for men than women (421.9 vs. 303.6), more women died from CVD than men (7722 vs. 6905). More women died from CVD because women are more likely to live to older ages when CVD is more common.



For coronary heart disease, gender, more than race, is a predictor of death rate. In 2002, the age-adjusted death rate from coronary heart disease was 73% higher for men (225.1) as compared to women (130.0). African American men (233.4) and White men (225.4) had similar age adjusted death rates when compared to an age adjusted rate of 157.5 among African American women and 121.2 among White women (Figure 9).

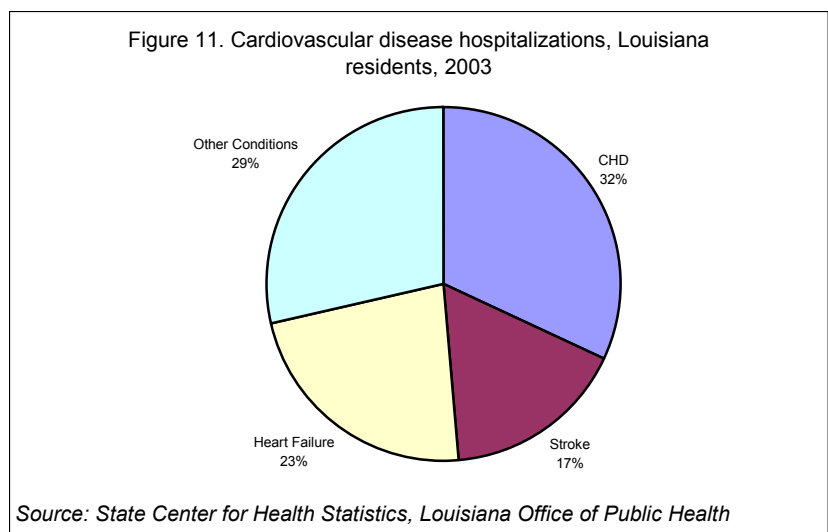
Unlike Coronary Heart Disease (CHD) deaths, for which gender differences are more striking than racial differences, age adjusted stroke deaths in Louisiana are much higher for African Americans than Whites. In 2002, the age-adjusted stroke death rate for African Americans (85.5) was 1.5 times the rate for Whites (55.6). African American males had a higher age adjusted stroke death rate in 2002 (93.9) than African American females (77.9), while the rates for White males (53.6) and females (56.2) were similar in 2002 (Figure 10).



Hospitalizations for Cardiovascular Disease in Louisiana

In addition to the approximately 15,000 Louisianans dying from CVD each year, many more Louisianans experience a heart attack, stroke, or other cardiovascular event that is not fatal. For most of these CVD survivors, their lives have changed forever. Most will need medications for the rest of their lives. Some are left with permanent, severe disabilities such as the loss of speech or the inability to move an arm or leg. The burden of non-fatal CVD in Louisiana can be estimated by examining hospitalizations for the various CVD conditions.

In 2003, 16.8% of the 543,219 hospitalizations in Louisiana were for CVD. There were 91,464 hospitalizations due to CVD, an average of five hospitalizations for every CVD death. Louisiana residents spent a total of 455,652 days in the hospital due to CVD, at a cost of \$2.4 billion. The average hospitalization for CVD lasted 5 days and produced \$26,608 in charges.



A majority of the primary diagnoses for those hospitalizations were coronary heart disease, stroke, and heart failure (Figure 11). Coronary heart disease accounted for 29,233 hospitalizations in 2003 with an average length of stay of 4 days and average hospital charges of \$34,075 per patient. There were 15,218 hospitalizations for stroke, with an average length of stay of 5 days and average hospital charges of \$21,266 per patient. Heart failure accounted for

20,877 hospitalizations, with an average length of stay of 5 days and average hospital charges of \$20,204 per patient (Table 2). In addition to hospital charges, other indirect costs associated with CVD include long-term care and rehabilitation, lost productivity, and lost family resources, particularly among individuals with permanent disabilities. The health and economic burden that CVD places on the health care system and our society is profound, and is expected to increase as our population ages.

Table 2. Hospitalization Charges for CVD in Louisiana, 2003

Discharged	Coronary Heart Disease	Stroke	Heart Failure	Other Conditions
Total Number	29233	15218	20877	26136
Gender				
Males	16558	6764	9433	12132
Females	12675	8454	11444	14004
Age Group				
44 and Younger	1809	744	973	2645
45-54	5290	1608	2149	3260
55-64	7092	2658	3435	4481
65-74	7500	3933	4916	6506
75-84	5760	4397	6078	6662
85 and older	1782	1878	3326	2582
Total Charges	\$996,135,177	\$323,632,516	\$421,802,527	\$692,180,163
Total Hospital Days	121,659	84571	113487	135935
Average Length of Stay	4	6	5	5
Average charge per patient	\$34,075	\$21,266	\$20,204	\$26,561

Cardiovascular disease statistics by parish

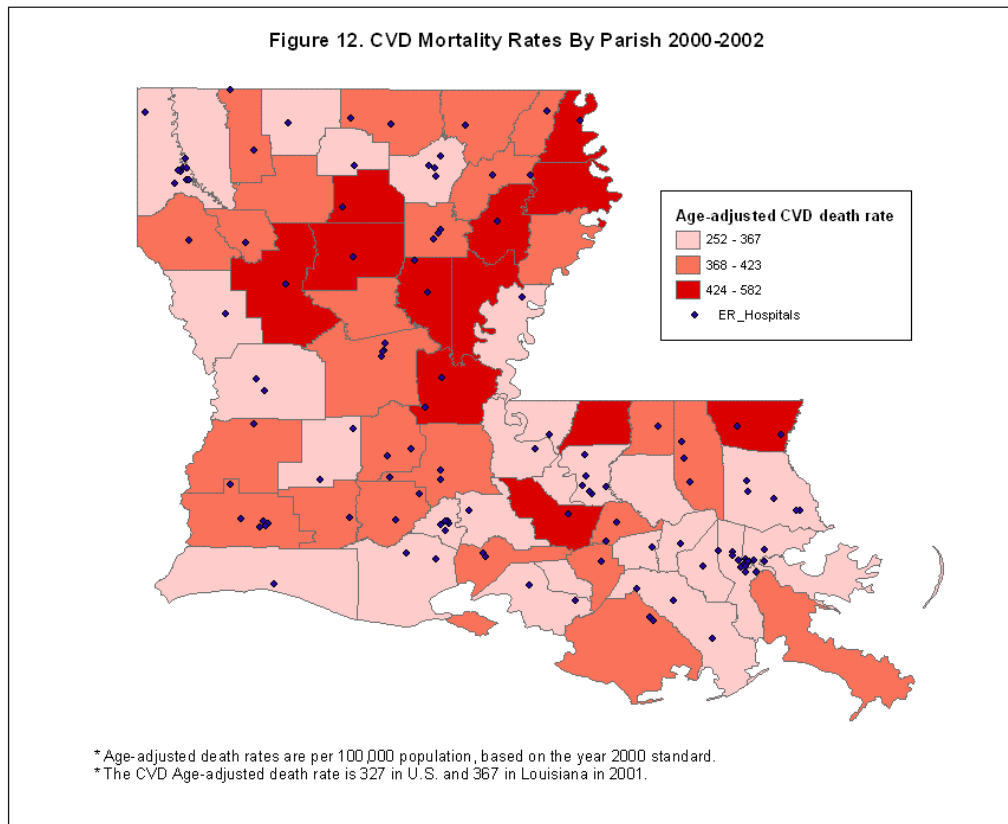
Table 3 shows the number of CVD deaths in 2002 (column 1), the percent of all deaths caused by CVD (column 2), and the average annual age-adjusted mortality rate for CVD from 2000-2002 (column 5) for each of Louisiana's parishes. Age-adjusted death rates were calculated for three-year periods due to parishes with small populations that had too few CVD deaths to accurately calculate an age-adjusted death rate on a per year basis.

Table 2. Cardiovascular disease death rates by Parish

Parishes (n=64)	# of CVD Deaths in 2002	% of All Deaths in 2002	Age-Adjusted Death Rate 1994-1996	Age-Adjusted Death Rate 1997-1999	Age-Adjusted Death Rate 2000-2002	Rank 2000- 2002	# of CVD Deaths in 2002 Male	# of CVD Deaths in 2002 Female
LOUISIANA	14627	35%	418.0	398.5	362.8		6905	7722
Acadia	216	36%	489.2	414.4	401.0	19	106	110
Allen	81	37%	427.2	430.1	366.2	40	39	42
Ascension	207	39%	425.9	402.9	391.6	24	107	100
Assumption	78	39%	372.9	458.2	404.1	16	37	41
Avoyelles	192	37%	443.8	467.2	435.7	11	88	104
Beauregard	118	39%	500.4	418.1	371.4	34	51	67
Bienville	77	33%	382.9	414.3	373.9	31	27	50
Bossier	268	34%	381.1	348.2	344.4	53	116	152
Caddo	884	34%	359.4	342.7	334.7	57	392	492
Calcasieu	631	38%	426.4	418.8	374.3	30	307	324
Caldwell	41	39%	405.8	447.7	369.3	36	18	23
Cameron	27	40%	433.7	363.7	318.7	60	13	14
Catahoula	60	44%	439.1	430.1	455.5	5	26	34
Claiborne	67	35%	387.2	376.3	364.9	41	27	40
Concordia	66	32%	415.7	473.0	292.2	63	29	37
DeSoto	116	42%	492.5	484.7	387.7	26	53	63
E.Baton Rouge	1166	34%	430.6	426.4	359.3	44	548	618
E.Carroll	38	38%	527.7	408.7	451.4	8	17	21
E.Feliciana	93	41%	472.9	571.0	483.1	3	52	41
Evangeline	129	34%	426.1	400.4	417.7	13	64	65
Franklin	118	50%	440.9	492.1	581.7	1	56	62
Grant	56	28%	435.1	426.7	387.5	27	28	28
Iberia	229	35%	411.8	435.9	380.9	28	128	101
Iberville	134	40%	423.8	415.8	454.5	6	75	59
Jackson	67	31%	466.3	462.4	448.8	9	30	37
Jefferson	1489	35%	436.5	405.5	347.5	52	700	789
Jeff. Davis	127	39%	403.6	453.5	373.1	32	53	74
Lafayette	439	31%	357.7	360.3	317.5	62	197	242
Lafourche	264	36%	417.7	382.0	324.3	58	125	139
LaSalle	72	45%	456.0	434.7	466.4	4	29	43
Lincoln	90	30%	363.6	303.4	252.4	64	36	54
Livingston	252	36%	380.6	277.6	335.4	56	130	122
Madison	65	45%	581.0	488.0	576.5	2	34	31
Morehouse	144	39%	441.7	435.8	389.9	25	71	73
Natchitoches	156	39%	442.4	435.4	440.9	10	73	83
Orleans	1581	31%	399.1	391.7	354.4	49	712	869
Ouachita	453	35%	371.1	385.0	343.6	54	211	242
Plaquemines	79	36%	419.7	360.7	407.8	15	46	33
Pt. Coupee	81	35%	442.4	421.0	361.0	43	36	45
Rapides	483	36%	439.4	419.2	396.4	21	237	246
Red River	39	39%	612.4	485.3	401.9	18	16	23
Richland	108	40%	420.3	416.0	395.4	22	54	54
Sabine	103	37%	419.7	386.3	353.0	51	54	49
St.Bernard	232	30%	442.6	411.8	338.7	55	120	112
St.Charles	110	34%	413.4	403.7	354.1	50	48	62
St.Helena	33	31%	458.7	464.3	377.6	29	16	17
St.James	73	38%	456.0	356.7	362.6	42	38	35
St.John	107	36%	473.3	395.7	357.9	46	47	60
St.Landry	294	34%	461.6	436.1	370.7	35	145	149
St.Martin	159	38%	417.0	384.3	367.0	39	67	92
St.Mary	177	35%	400.1	380.3	357.9	47	93	84
St.Tammany	497	32%	407.5	342.4	318.4	61	240	257
Tangipahoa	351	37%	520.5	471.2	396.9	20	175	176
Tensas	31	38%	689.2	491.5	372.8	33	12	19
Terrebonne	302	36%	466.8	398.6	367.3	38	148	154
Union	91	37%	447.3	401.5	392.0	23	46	45
Vermilion	239	41%	398.8	392.5	367.9	37	103	136
Vernon	105	31%	389.1	371.5	322.8	59	54	51
Washington	194	37%	519.5	474.4	423.9	12	77	117
Webster	200	39%	447.1	366.2	417.6	14	109	91
W.Baton Rouge	55	33%	454.5	384.6	354.5	48	26	29
W.Carroll	64	44%	446.1	501.4	403.7	17	31	33
W.Feliciana	43	42%	372.6	345.4	358.8	45	20	23
Winn	76	37%	431.7	437.8	451.4	8	34	42

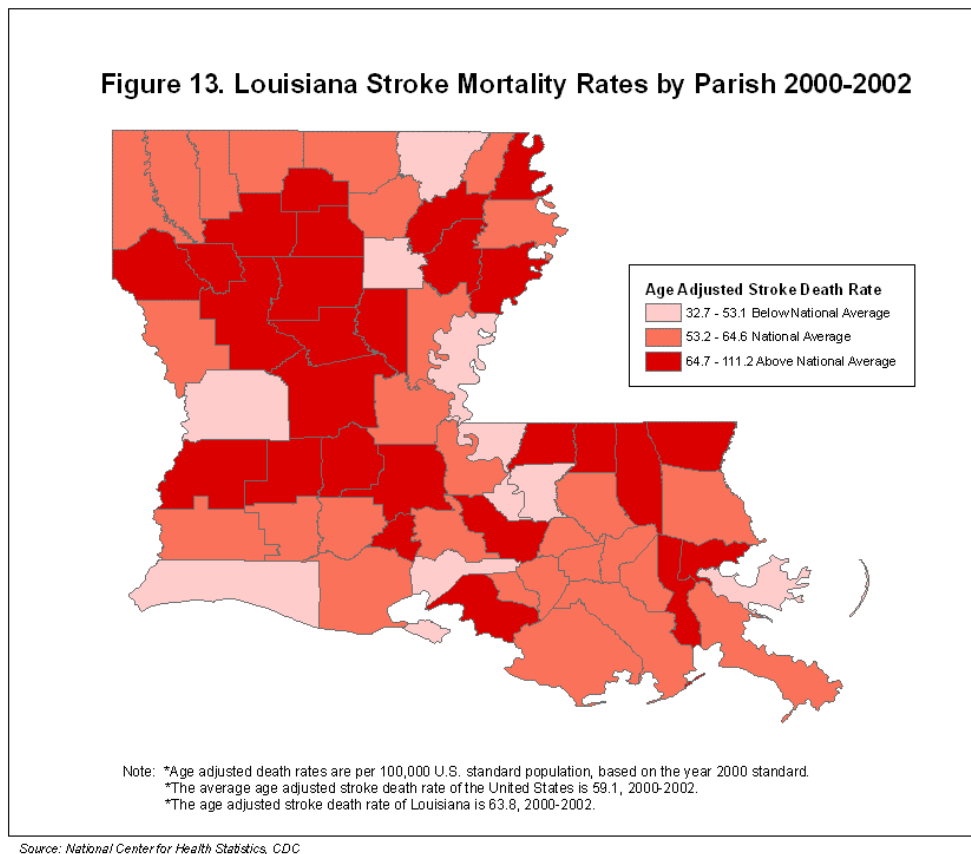
Age-adjusted death rates are per 100,000 U.S. standard population, based on the year 2000 standard.

Figure 12 (map) shows the average annual age-adjusted CVD death rates by parish during the period 2000-2002. Parishes with the highest CVD death rates are clustered in the northern region, along the state's northeastern border. There are many factors related to the death rates of CVD. The map indicates the availability of hospitals with an Emergency Room in each parish.



Source: National Center for Health Statistics, CDC

Figure 13 (map) shows the average annual age-adjusted stroke death rates by parish during the period 2000-2002. Parishes with the highest stroke death rates are clustered in the central region, and the state's northeastern border.



Cardiovascular Disease Risk Factors

Most CVD risk factors are modifiable, meaning that individuals can change their behavior to slow, or even reverse the process of arterial blockage and decrease their risk of having a heart attack or stroke. Modifiable risk factors include smoking, high blood pressure, high blood cholesterol level, overweight or obesity, lack of regular physical activity, poor diet, and diabetes.

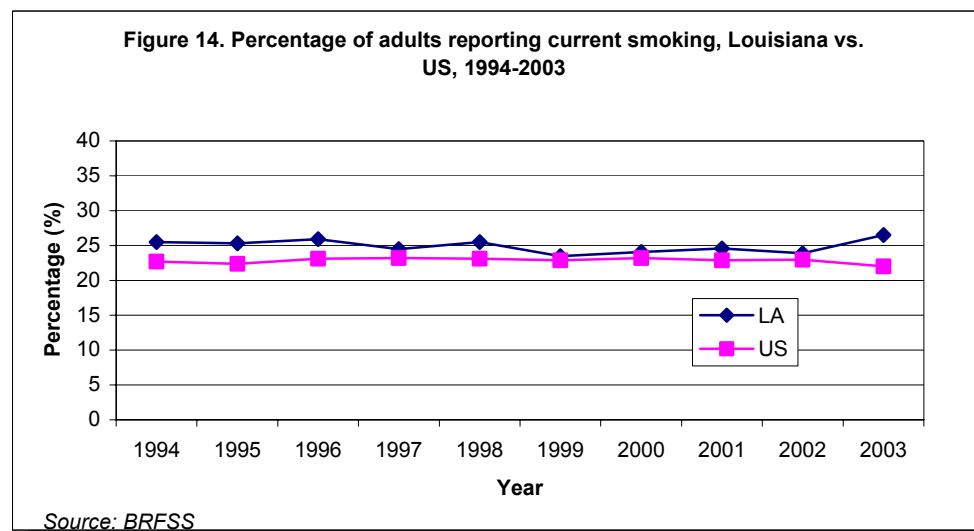
Some CVD risk factors cannot be modified, such as age (CVD mortality increases with age), gender (males have higher CVD mortality rates than women, especially before menopause), race (African Americans generally have higher CVD mortality rates than Whites), and a family history of heart attacks at a young age. Individuals with risk factors that cannot be changed should be particularly diligent in eliminating modifiable risk factors.

Smoking

Tobacco use is a major risk factor for CVD. Each year smoking causes more deaths from heart attacks than from cancer. The prevalence of Louisianans who currently smoke has remained constant over the last decade (Figure 14). In 2003, 26.5% of Louisiana adults reported that they currently smoke cigarettes.

Tobacco use, prevention and cessation are key approaches to reducing the morbidity and mortality due to smoking. The good news is that giving up smoking quickly reduces the chance of developing CVD. Within five years, the chances of

having a heart attack are 50% to 70% lower for former smokers compared with current smokers. Beyond getting current smokers to quit, it is very important to prevent people, especially youth, from starting to smoke.



High blood pressure

High blood pressure, or hypertension, is a major risk factor for both heart disease and stroke. Almost 30% of adult Louisianans suffered from high blood pressure in 2003 (Figure 15). The proportion of Louisianans with undiagnosed hypertension is unknown. Nationally, only two thirds of people with high blood pressure know they have it (Facts on High Blood Pressure, CDC). It is important to ensure adequate control of high blood pressure (Table 4) through exercise, minimizing alcohol consumption, weight management and medication.

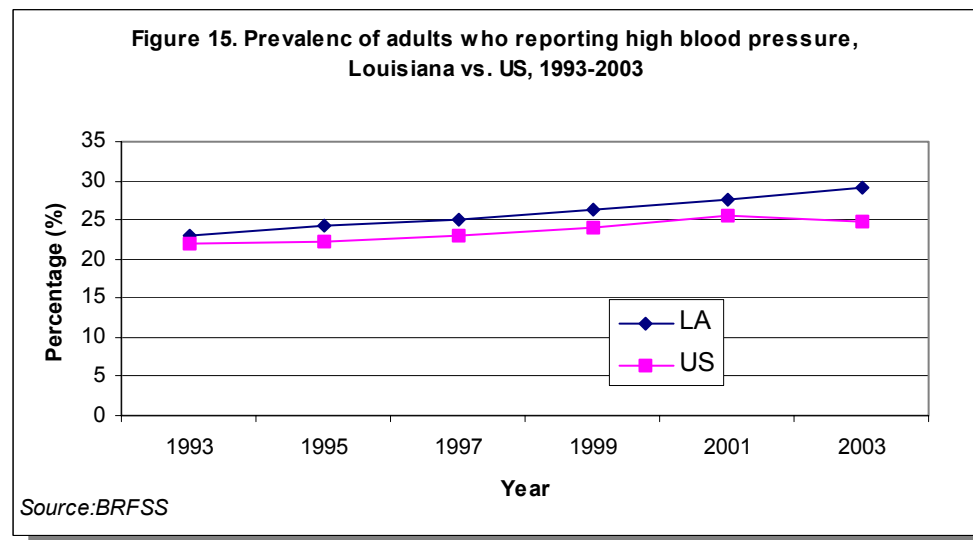
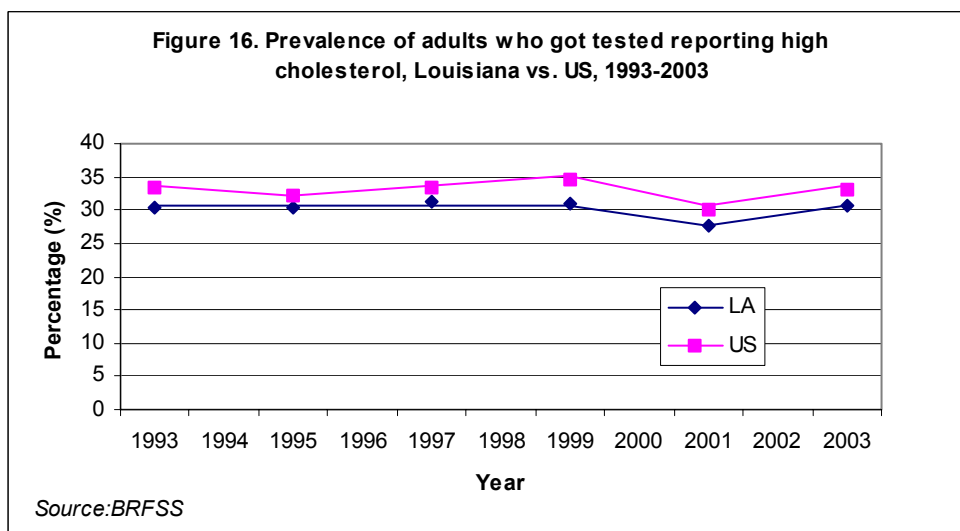


Table 4. Classification of Blood Pressure for Adults age 18 or Older*			
BP Classification	SBP** (mm Hg)	DBP** (mm Hg)	Lifestyle Modification
Normal	<120	And <80	Encourage
Prehypertension	120-139	Or 80-89	Yes
Stage1 Hypertension	140-159	Or 90-99	Yes
Stage2 Hypertension	≥160	Or ≥100	Yes
* Classification determined by highest BP category.			
**SBP, systolic blood pressure; DBP, diastolic blood pressure.			
Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure. The Seventh Report of the National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC VII), 2003.			
Table 5. Blood Cholesterol Categories			
LDL Cholesterol – Primary Target of Therapy			
< 100		Optimal	
100 -129		Near optimal/above optimal	
130 -159		Borderline high	
160 -189		High	
≥ 190		Very high	
Total Cholesterol			
< 200		Desirable	
200-239		Borderline high	
≥ 240		High	
HDL Cholesterol			
< 40		Low	
≥ 60		High	
Third Report of the Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults.			

High Cholesterol

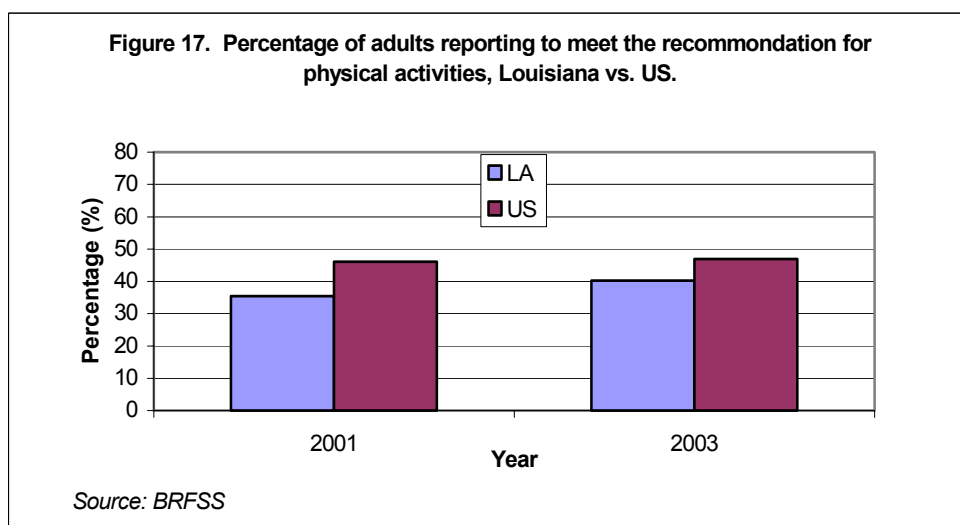
Elevated blood cholesterol is one of the strongest risk factors associated with coronary heart disease. Cholesterol plays a direct role in the atherosclerotic process, one of the disease processes that underlies heart disease and stroke, in which cholesterol accumulates on the arterial walls, building plaque and restricting blood flow. Low-density lipoprotein (LDL), the “bad cholesterol”, clogs the arteries to the heart therefore increasing the risk of heart disease. High-density lipoprotein (HDL), the “good cholesterol”, decreases the risk of heart disease by collecting the “bad cholesterol” and taking it back to the liver. Lowering high total blood cholesterol levels can decrease the likelihood of death from heart disease.



The prevalence of Louisiana adults (35 years and older) who have not had their blood cholesterol checked within the previous five years was 29% in 2003. Of persons who had been checked, 31% were reported having high cholesterol in 2003 (Figure 16).

Cholesterol levels can be controlled through a combination of diet and medications. In adults, a total cholesterol level of 200 mg/dL or higher is considered high risk; and LDL levels greater than 130 mg/dL or HDL level lower than 40mg/dL are also considered high risk (Table 5). The National Institutes of Health recommend that all persons over the age of 20 years get a fasting lipoprotein profile (total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides) every five years.

Physical Activity



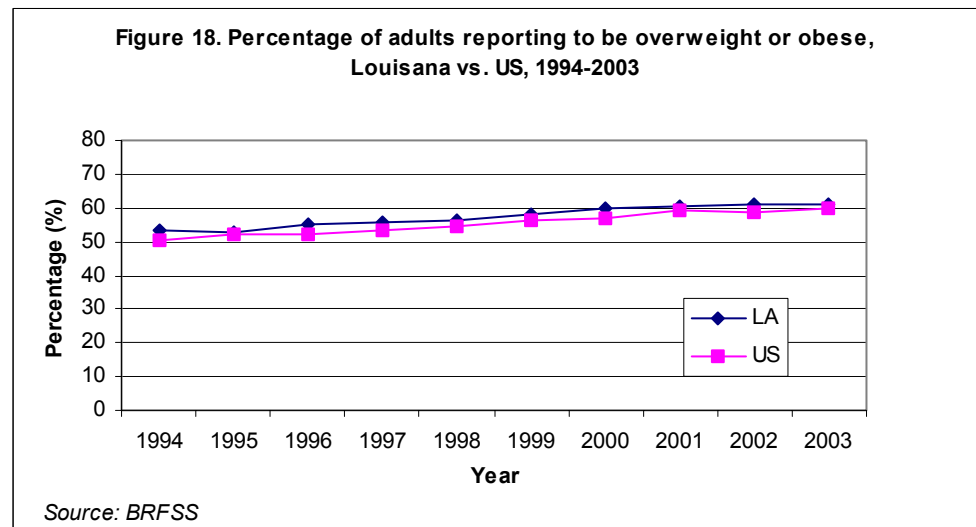
Regular moderate or vigorous physical activity can reduce the risk of CVD. Healthy People 2010 recommends that adults should engage in vigorous-intensity physical activity 3 or more days per week for 20 or more

minutes per occasion, or engage in moderate-intensity physical activity for at least 30 minutes on 5 or more days per week. Only 35% of Louisianans met the recommendations in 2001. The proportion of those who met the recommendations increased to 40% in 2003, but it is still below the national level (47%) (Figure 17).

Overweight and Obesity

Adults who are overweight or obese are at higher risk for CVD than those who are normal weight. The epidemic of adults suffering from being overweight (BMI ≥ 25.0 Kg/m²) or obese (BMI ≥ 30.0 Kg/m²) has been on the rise both in Louisiana and the

US (Figure 18). The prevalence of overweight and/or obese adults in Louisiana (61%) was slightly higher than the median of the US (60%) in 2003. Losing weight and being physically active on a regular basis can improve blood pressure and cholesterol levels, and can decrease the chances of developing diabetes, another risk factor for heart disease.

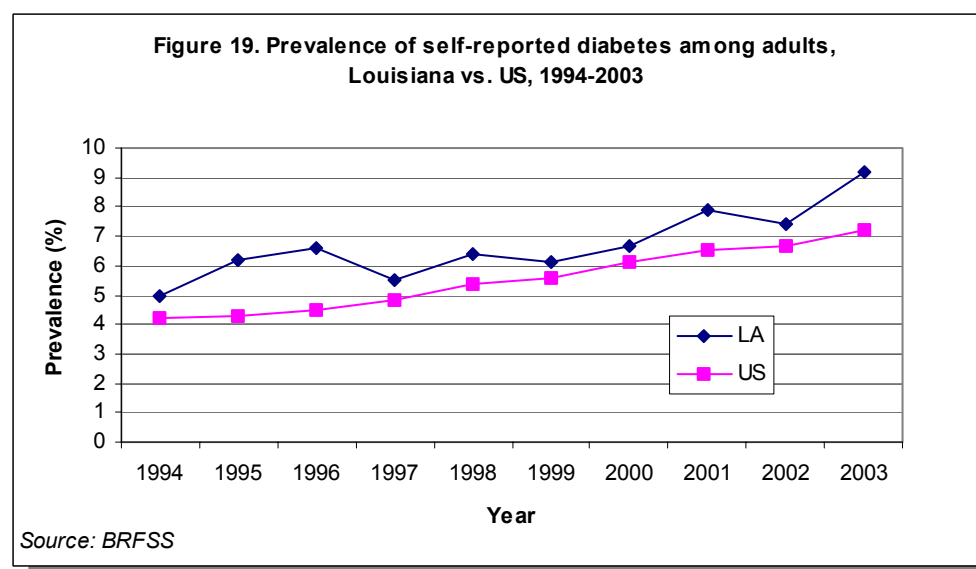


Diabetes

People with diabetes have twice the risk for cardiovascular disease compared to those who do not have diabetes. The prevalence of diabetes has increased nationwide during the past decade. In Louisiana, the prevalence of diabetes among adults increased from 5.0% in 1994 to 9.2% in 2003. The prevalence was constantly higher than the national rate between 1994-2003 (Figure 19).

Of the two major types of diabetes (Type1 and Type2), Type 2 diabetes can be prevented or delayed by eating a healthy diet, maintaining a normal body weight, and getting regular physical activity. The complications of diabetes can be prevented or

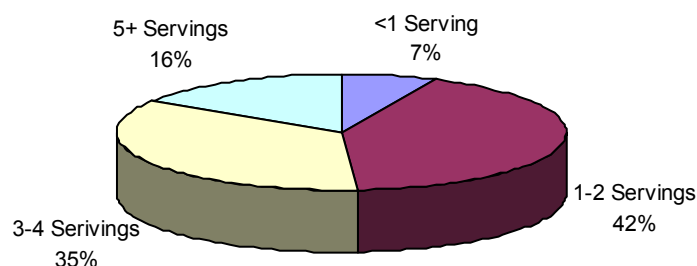
delayed by the previous recommendations as well as maintaining a normal blood sugar, having routine feet and eye exams, not smoking and maintaining a normal blood pressure.



Fruits and vegetables consumption

Eating five or more servings of fruits or vegetables per day can help prevent heart disease, cancer, and other chronic conditions. In 2003, 84% of Louisianans reported that they did not consume at least five servings of fruits and vegetables per day (Figure 20).

Figure 20. Daily servings of fruits and vegetables consumed by Louisianans, 2003



Source: BRFSS

Previous Cardiovascular Disease

In 2003, approximately 10% of Louisiana adults reported having been told by a doctor that they had experienced a heart attack, stroke or had coronary heart disease. The American Heart Association recommends consideration of the use of aspirin for persons who have had a heart attack, unstable angina, ischemic stroke or transient ischemic attack, to reduce the progression of disease. Of the Louisianans reporting a history of heart attack, stroke or ischemic heart disease, 67% reported taking aspirin every day. For certain types of heart conditions, other medications may be needed to reduce the risk of recurrence.

Clustering of CVD Risk Factors

More than 85% of adult Louisianans have at least one of the five primary CVD risk factors (Table 6). An individual can decrease his/her personal risk of having a heart attack or stroke by eliminating modifiable risk factor. The good news is that health improves when even one or two risk factors are improved.

Table 6. The Number and Percentage of Louisiana Adults with Modifiable Risk Factors* for CVD, 2003.

Number of Risk Factors	Number of adult Louisianans	Percentage of adult Louisianans (%)
0 or unknown**	443,090	13.4
One	1,079,589	32.7
Two	1,002,386	30.4
Three	591,147	17.9
Four	160,613	4.9
Five	26,038	0.8

*Modifiable risk factors include high blood pressure, high blood cholesterol, smoking, physical inactivity, and overweight/obesity.

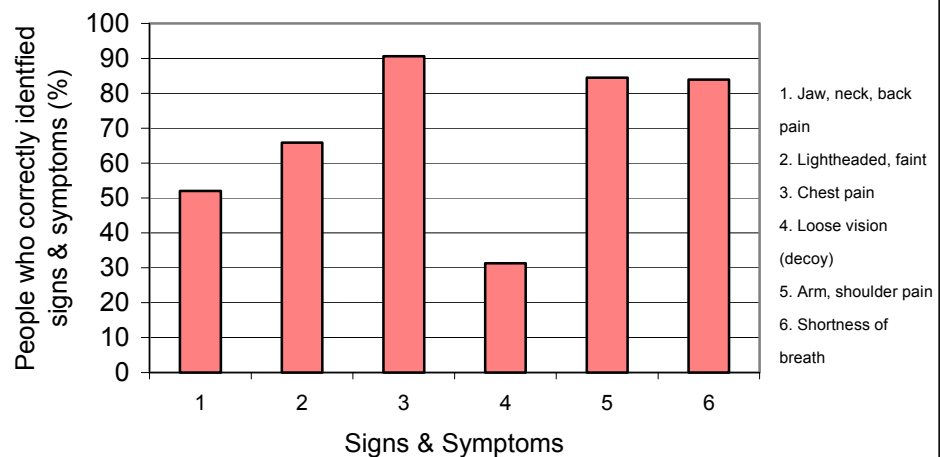
**Data includes those who didn't answer one or more of the five questions about the risk factors.

Signs & Symptoms

Of the 14,627 deaths due to CVD in 2002, 41% were due to an acute CVD event such as Acute Myocardial Infarction (AMI) or Cerebrovascular Accident (Stroke). One of the factors known to adversely influence the outcome of an acute CVD event is the time between the onset of symptoms and initiation of treatment. Awareness of signs and symptoms of heart attack and stroke can help to reduce the time between onset of symptoms and initiation of treatment.

The awareness of the individual signs and symptoms of a heart attack varied widely in 2004. Ninety-one percent of the respondents were able to identify chest pain/discomfort as a symptom of heart attack, whereas only 31% of them reported trouble seeing in both eyes (loose vision) as not being a symptom of heart attack (decoy question) (Figure 21).

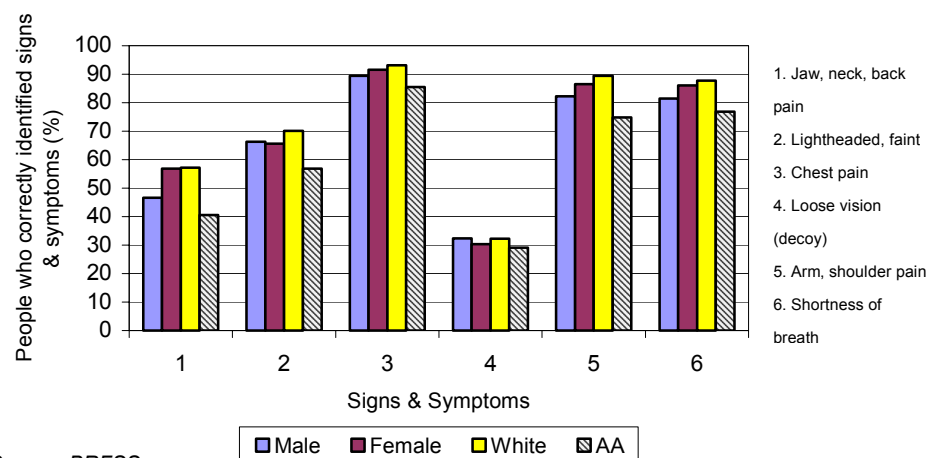
Figure 21 Awareness of signs and symptoms of heart attack, Louisiana, 2004



Source: BRFSS

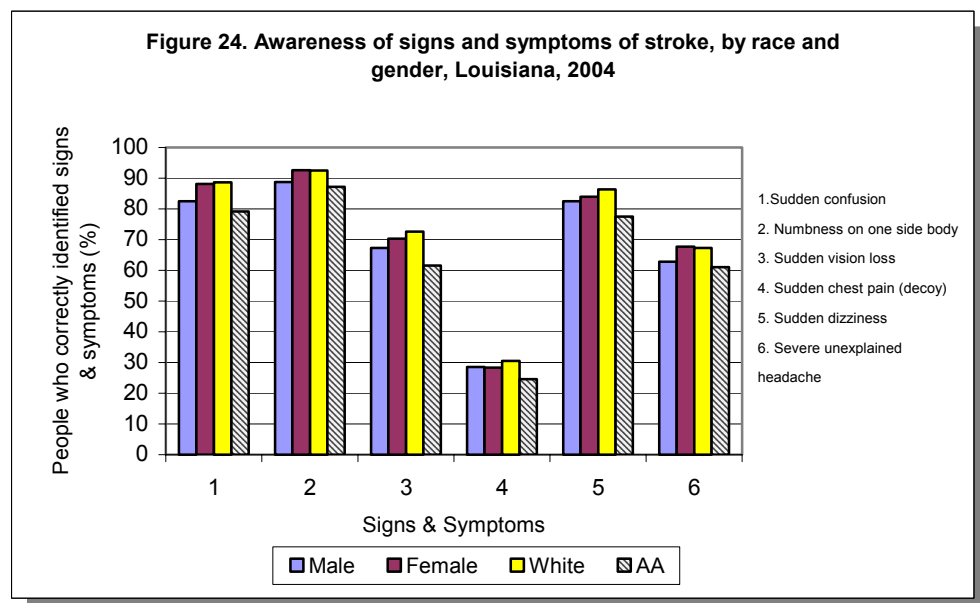
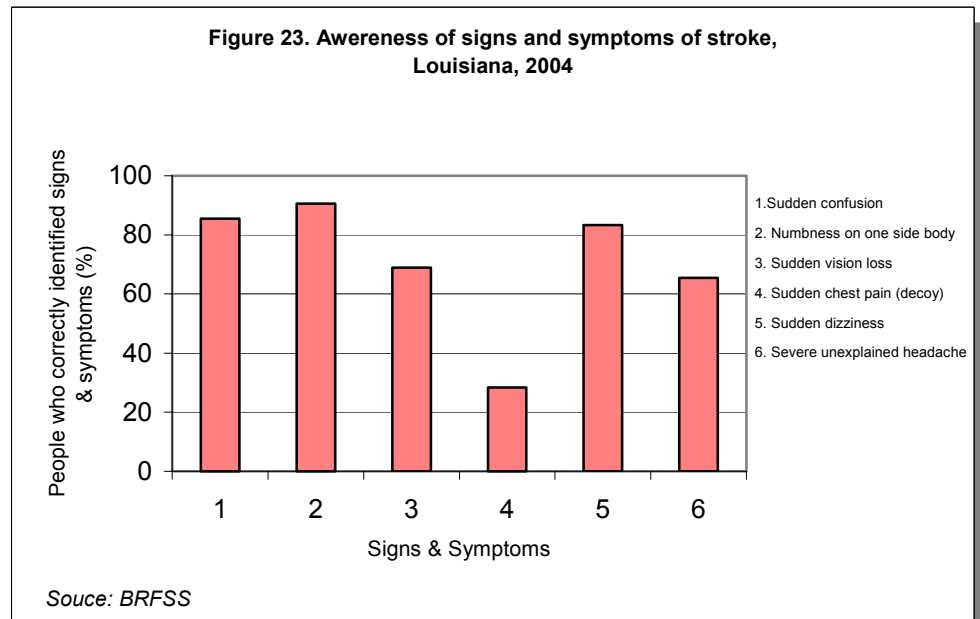
There were no differences in the awareness between men and women; however, African Americans reported less awareness of signs and symptoms of heart attack than Whites (Figure 22).

Figure 22. Awareness of signs and symptoms of heart attack, by race and gender, Louisiana, 2004



Source: BRFSS

It was also observed that a wide variation in public awareness exists for the signs and symptoms of stroke. A greater proportion (91%) of respondents were able to identify sudden numbness or weakness of face, arm or leg on one side of the body as a symptom of stroke, whereas only 28% of them were able to correctly identify chest pain/discomfort as not being a symptom of stroke (decoy question) (Figure 23). There were no differences in the awareness between men and women; however, African Americans reported less awareness of signs and symptoms of stroke than Whites (Figure 24).



Relationship between CVD risk factors and awareness of signs and symptoms of heart attack and stroke

Pearson's chi-square tests were performed to evaluate if differences in the awareness of signs and symptoms of heart attack and stroke existed between individuals with and without risk factors. People who reported having diabetes or hypertension have less awareness of signs and symptoms of heart attack and stroke than those not reporting diabetes or hypertension. There were no significant differences between people with and without the other three risk factors: smoking, high cholesterol and overweight/obesity (Table 7).

Table 7. Relationship between pre-existing cardiovascular disease risk factors and awareness 3 or more signs and symptoms of heart attack and stroke

Risk Factors	N	Awareness of 3 or more Heart Attack Signs & Symptoms	P-value	N	Awareness of 3 or more Stroke Signs & Symptoms	P-value
Smoking			0.19*			0.83*
Current	1975	88.1%		1975	86.4%	
Former	1739	88.8%		1739	86.6%	
Never	4897	87.2%		4905	86.9%	
Hypertension			0.0001			0.0001
Yes	2982	84.9%		2978	83.8%	
No	5654	89.3%		5666	88.3%	
High Cholesterol			0.58*			0.43*
Yes	2281	89.0%		2277	87.7%	
No	4318	88.6%		4322	88.4%	
Diabetes			0.0001			0.0003
Yes	807	82.0%		808	82.7%	
No	7829	88.4%		7836	87.2%	
BMI			0.82*			0.53*
Normal (<25.0)	3049	87.5%		3057	87.0%	
Overweight (25.0-29.9)	2882	88.0%		2883	87.1%	
Obese (≥30.0)	2288	87.8%		2288	86.1%	

Source: BRFSS

*Not Significant

Conclusions

This report summarizes the most recent information available on cardiovascular disease deaths and hospitalizations in Louisiana, and the associated health risk behaviors among adult Louisianans. Cardiovascular disease death rates in Louisiana are among the highest in the nation. Although CVD mortality rates have been declining over the last decades, much work is still needed to further reduce morbidity and mortality rates.

Some cardiovascular risk factors are increasing while others are still prevalent in the Louisiana population. Disparities in cardiovascular disease mortality rates especially coronary heart disease and stroke mortality rates between racial and gender groups are of great concern and efforts should be made to eliminate these disparities.

The burden of non-fatal cardiovascular disease in Louisiana was estimated by the hospitalizations for the various CVD conditions in this report. However, statewide data on heart disease and stroke fatality rates and survival, and life quality and incidence are not available. In order to have a better profile of CVD in Louisiana, these important measures need to be incorporated into our disease surveillance system.

Awareness of the individual signs and symptoms of heart attacks and strokes varied widely. In general, African Americans reported being less aware of signs and symptoms of heart attack and stroke than Whites. Increasing awareness of signs and symptoms of heart attack and stroke can help to reduce the time between the onset of symptoms and initiation of treatment, thus improving the outcome of an acute CVD event.

A great proportion of death and disability due to CVD is preventable. A collaborative effort involving individuals from communities, schools, workplaces and healthcare is underway with the Louisiana Heart Disease and Stroke Prevention Coalition. Through education, policy and environmental change, the coalition is paving the way for a “heart-healthy” Louisiana.

Appendix: methods, definitions, and abbreviations

Methods

Data on deaths from cardiovascular disease in Louisiana were provided by the State Center for Health Statistics of the Louisiana Office of Public Health. Data from the United States were provided by the National Center for Health Statistics, CDC via CDC Wonder, an online resource of the CDC. Hospitalization data from Louisiana hospitals were provided by the Louisiana Hospital Inpatient Discharge Database (LAHIDD), State Center for Health Statistics, Louisiana Office of the Public Health.

Data on risk factors were obtained from the Behavioral Risk Factor Surveillance System (BRFSS). BRFSS is an ongoing, state-level, random-digit-dialed telephone survey of the adult population (18 years and older) in the United States. In Louisiana, the sample size remained at approximately 1656 from 1990 to 1999. However, the sample size was increased to approximately 5000 from 2000 to 2003. In 2004, the BRFSS sample size expanded to about 9000.

Definitions

The definitions of cardiovascular disease used in this report were based on the Ninth Revision of the International Classification of Disease (ICD-9) for the years 1987 to 1998. In years after 1998, ICD-10 was used to classify the diseases. For cardiovascular disease, the comparability ratios between ICD-9 and ICD-10 are close to 1, according to the National Vital Statistics Report, Vol. 49, No.2, May18, 2001. The following table shows the codes used to define the disease categories in this report:

Category	ICD-9 Codes	ICD-10 Codes
Major Cardiovascular Disease (CVD)	390-434; 436-448	I00-I78
Coronary Heart Disease (Ischemic Heart Disease)	410-414; 429.2	I20-I25
Heart Failure	428	I50
Stroke	430-434; 436-438	I60-I69

CVD risk factors assessed by the BRFSS include the following:

Current smoker: Defined as someone who has smoked at least 100 cigarettes in their lifetime and smokes now.

High blood pressure: Defined as ever having been told by a doctor, nurse, or health professional that your blood pressure was high among those who had their blood pressure checked.

High blood cholesterol: Defined as ever having been told by a doctor, nurse, or health professional that your blood cholesterol level was high among those who had their blood cholesterol checked.

Meet the recommendation for physical activity: Adults who engage in vigorous-intensity physical activity 3 or more days per week for 20 or more minutes per occasion, or engage in moderate-intensity physical activity for 30 minutes on 5 or more days per week.

Overweight: Defined as a body mass index (BMI) greater than 25.0Kg/m^2 . BMI equals weight (in kilograms) divided by height (in centimeters) squared. Using weight (in pounds) and height (in inches), BMI equals 705 times weight divided by height squared.

Obese: Defined as a body mass index (BMI) greater than 30.0kg/ m^2 .

Daily serving of fruits and vegetables: Number of servings of fruit, fruit juice, green salad, potatoes, carrots, and other vegetables consumed per day based on reports for consumption during the past day, week, month, or year.

Diabetes: Defined as ever having been told by a doctor or a health professional that you have diabetes.

Previous cardiovascular disease: Defined as ever having been told by a doctor or a health professional that you had a heart attack or myocardial infarction, angina or coronary heart disease, or a stroke.

Abbreviations

CVD: Cardiovascular disease

CHD: Coronary Heart Disease

BMI: Body Mass Index

HDL: High-Density Lipoprotein

LDL: Low-Density Lipoprotein

ICD-9: The International Classification of Diseases, 9th Revision

ICD-10: The International Classification of Diseases, 10th Revision

CDC: Center for Disease Control and Prevention